MILFORD METERING PROGRAM

Over the past several years the State Engineer and his staff have worked with the water users in the Milford area to try to get accurate measurements of the amount of water used by each irrigation well.

Several different approaches have been tried to meet the challenges which came up and we have met with some success. However, there has been one challenge that has repeatedly limited our ability to obtain accurate measurements. It has been very difficult to keep the water meters in accurate operating condition.

There are several factors which contribute to this situation:

1. There are about 160 wells in the distribution system. Each well presents a separate measurement problem because of the many different types of meters in use and because each meter has been installed in a different way.

2. The commissioner does not have direct control over the maintenance of the meters. He must work through the individual water user when there is a problem with the meter. Some water users do not cooperate in getting their meters repaired.

3. It is difficult to get some meters repaired because the spare parts are not available. Some meters must be repaired by the manufacture and there is a long wait for service.

4. Some water users have incorrectly installed the meters so they do not give accurate readings.

5. The pitot tube has been used with some success. It provides accurate measurements but it useability is limited to wells with electric pumps.

6. There are some open ditch systems which cannot use meters. Also, some pipeline systems require special installations because the pipe does not flow full or the flow is too slow to turn a meter.

The division staff has expended a considerable amount of time trying to get the Milford distribution system to the point where the commissioner could make measurements with minimal assistance from our office. If we continue with the current system and continue our current level of effort, we may in time be able to accomplish that. However, our manpower is limited and there are other areas that need our attention.

Therefore, it is necessary that there be a basic change in how water measurement is handled in the Milford area. Attached are two alternative water measurement proposals which will be discussed at the annual meeting. A vote will be taken to determine which alternative will be used starting in 1996.

We have discussed these alternatives with the distribution system committee. We believe that either alternative will improve the accuracy of water measurement in the Milford area and will allow our staff to move on to review water measurement in other areas such as the Beryl-Enterprise area and the Beaver area.

ALTERNATIVE 1

REGULATE WATER USE BY WATER MEASUREMENT

METERS

1. Wherever meters are referred to in this proposal it means meters on pipeline systems, flumes or weirs on open ditch systems, or any other type of measuring device used by the irrigators to measure water.

2. The operation and maintenance of the existing meters will become the responsibility of the distribution committee and the commissioner. If a water user chooses not to allow the committee and the commissioner to operate and maintain the meter(s) on his or her system, the committee will install its own meter in the users system.

3. Section 73-5-4 of the Utah Code authorizes the State Engineer or his appointed commissioner to determine the locations of measuring devices for obtaining accurate measurements. Therefore, the commissioner will decide where meter(s) need to be installed on each system. The commissioner will try to work with the water user in determining the location of any new meter or any meter which needs to be moved. However, the most important considerations will be that the location provide the information the commissioner needs and that the meter can be installed to measure accurately. On many systems, the correct location for the meter will require that it be installed in a manhole. The manhole will be lockable in case the commissioner needs to prevent tampering. Some meters are installed correctly now and if needed would be secured by a lockbox.

4. The meters will be installed in such a manner that the commissioner can remove and replace them without shutting down the well. If that is not possible, the water user will be responsible to shut down the system whenever requested by the commissioner for replacement of a defective meter.

5. The committee will be responsible to select the types of meters used. The committee's goal will be to have only a couple of standard types of meters used in the valley. This will greatly simplify the maintenance of the meters for the commissioner. There will be a transition period of about 5 years during which time the committee will replace or move any existing meters which do not operate correctly. This will involve the installation of approximately 30 new meters each year. After the transition period, new meters will only be installed as needed to replace meters that don't work.

6. During the transition period, the commissioner will be responsible to determine which meters should be replaced each year. After the transition period the commissioner will be responsible to decide when a meter needs to be replaced.

7. The commissioner will continue to use the pitot tube to take water measurements where it is needed and where it can provide accurate measurement data. However, water users will not be charged a separate fee for the use of the pitot tube on their system.

REGULATION

1. The commissioner will monitor water use to ensure irrigation does not commence before or extend beyond the dates shown on the water rights. The commissioner will report any violations to the State Engineer. Water users desiring to begin irrigating earlier or continue irrigating later than the dates shown in their water right must send a written request to the
Cedar City Regional Office. Approvals will be given only on a yearly basis.

2. The commissioner will visit each irrigation water meter at the beginning of the irrigation season and then at least every two weeks to record water use and monitor meter operation. Additional visits will be needed where it appears the meter is not operating correctly. Water meters used in commercial operations will be read every three months unless it appears there are problems with the meter. If the meter stops working the commercial operators will be responsible to inform the commissioner immediately.

3. An adjudication order dated June 18, 1962 established an irrigation duty of four acre-feet per acre of land awarded a water right under the Proposed Determination. The acre-foot limit of a water right will be determined by multiplying the duty and the acreage limitation on the water right. Only water rights on record with the Division of Water Rights will be recognized in the distribution of water.

4. When water users have reached the acre-foot limit of their water right, they will be notified by the commissioner that they need to shut off the well. The State Engineer will also issue a notice to the water users who reach their limit ordering them to cease the use of water. After the order has been issued, water users found violating the irrigation duty in the 1962 adjudication order will be subject to contempt proceedings in District Court.

5. The commissioner will notify the State Engineer of any illegal water use that comes to his attention in the pursuit of his duties.

ASSESSMENTS

Water users will be assessed for the installation, operation, & maintenance of the meters and the commissioner's salary and expenses. There are two ways the assessment could be handled:

1. The costs of installation, operation, and maintenance of the meters will be

paid by all the water users regardless of whether they need a meter installed or not.

2. During the transition period, the cost of installing a new meter would be charged to the water user who needed the new meter. All the other costs of operation and maintenance would be paid by all the water users. After the transition period, the costs of replacing any meters would be paid by all the water users.

The decision about which assessment method to use will be made by the water users at the annual meeting.

WATER COMMISSIONER

1. The extent of the commissioner's duties will require that the job be considered full time during the irrigation season.

2. The commissioner will maintain an inventory of meters, parts, equipment, etc. so that meters can be repaired or replaced quickly when needed.

3. The commissioner will assist in the budgeting process to help determine the equipment needs for the coming year.

4. If meters with battery operated display units are used, the commissioner will take the display units and batteries from each meter installation each fall after irrigation season. He will clean the displays and batteries and prepare them for winter storage. Each spring before irrigation season, the commissioner will re-install display units and batteries.

5. The commissioner will make repairs and/or replace meters that are not operating correctly.

6. The commissioner will prepare the annual report.

ALTERNATIVE 2

REGULATE WATER USE BY CONTROLLING IRRIGATED LAND

BACKGROUND

1. Section 73-1-3 of the Utah Code Annotated, 1953, as amended states, "Beneficial use shall be the basis, the measure and the limit of all rights to the use of water in this state." In the case of irrigation, this means that the water right is defined by the number of acres of irrigation allowed by the right, not by the amount of water described to meet the needs of the irrigated land.

2. Until recently, technology has not been available to the state engineer which would allow the measurement and evaluation of irrigated land in a timely manner. To compensate, state law (Section 73-5-4) requires each water user to install a measuring device and the state engineer establishes an irrigation duty for each area of the state. The irrigation duty is a calculation of the amount of water required by the crop plus an estimate of the water lost.

3. Technology and procedures now exist which could allow the state engineer in some situations to measure, evaluate, and regulate acreage each irrigation season.

4. Land irrigated from groundwater can be regulated without the need for water measuring devices. Distribution of water in areas irrigated from ground water differs from areas where land is irrigated from direct stream flows. The irrigation supply available from direct stream flow is variable and changes quickly with the changes of nature. It requires measuring devices to ensure it is divided equitably. The irrigation supply available from groundwater is more stable and depends more on the efforts of the water user than on the changes of nature.

REGULATION

1. The commissioner will monitor water use to ensure irrigation does not commence before or extend beyond the dates shown on the water rights. The commissioner will report any violations to the State Engineer. Water users desiring to begin irrigating earlier or continue irrigating later than the dates shown in their water right must send a written request to the
Cedar City Regional Office. Approvals will be given only on a yearly basis.

2. Except in a few specific situations, water use will not be measured. Irrigators will be required to limit their irrigation to the amount of land allowed by their water right at the location described in their water right.

3. Each year, irrigated acreage will be checked against the acreage described in the irrigators water right. The land being irrigated will be determined from aerial

photos taken each year sometime in the first two or three months of the irrigation season. This will be the only basis of regulation for most of the irrigated land in the Milford area. The irrigated land will be checked against land ownership plats and the water rights of record in the State Engineer's Office.

4. An adjudication order dated June 18, 1962 limited irrigation to those lands which were awarded a water right under the Proposed Determination. Therefore irrigation will be allowed only on those lands which are described in the Proposed Determination unless the proper change applications have been approved. The water rights of record in the State Engineer's Office will be the only basis for determining land which can be legally irrigated.

5. Those water users found to be irrigating illegal acreage will be notified by the State Engineer and will be ordered to cease the illegal irrigation. It is anticipated that notices and orders will be issued within about three weeks of the aerial photography.

6. The State Engineer will notify the commissioner which parcels of land are being irrigated illegally. The commissioner will immediately visit each illegal parcel and take soil moisture readings. The commissioner will then visit each illegal parcel on a weekly basis through the remainder of the irrigation season to take measurements and record soil moisture levels.

7. If the soil moisture level in any illegal parcel increases without the benefit of precipitation, it will be considered evidence of irrigation. The commissioner will report to the State Engineer any illegal parcels which are irrigated after the order to cease irrigation. After the order has been issued, water users found irrigating illegal acreage will be subject to contempt proceedings in District Court under the 1962 adjudication order.

8. Commercial operations will continue to be regulated by measuring water use. Meters will be required on the wells and they will follow the regulation method described in Alternative 1.

9. Water users who irrigate using both surface water (from shares in Rocky Ford Irrigation Company) and groundwater, will be required to have water meters on their wells. The commissioner will be responsible to determine the location of the meter and to operate and maintain it. The distribution committee will be responsible to determine the type of meter installed. The irrigated acreage will be checked each year in the same way the other land is checked to ensure against expansion. The meters will be read to ensure groundwater use does not exceed the irrigation duty for the number of acres allowed under the groundwater rights. As in Alternative 1, these wells will be ordered shut off when the limit of the water right has been reached.

ASSESSMENTS

1. The water users will be assessed for the cost of the aerial photos which will be taken each year. If Alternative 2 is selected by the water users, the State Engineer will pay the cost of the aerial photos for the first two years. This will allow the state to perfect the regulation process before the water users are assessed.

2. Each year a current set of land ownership plats for the irrigated area will be needed to update the division's records. For the first two years, the cost of the plats will be paid by the State Engineer. Afterwards, the water users will be assessed for the cost of the plats.

3. Irrigators who use both surface and groundwater will be assessed for the initial cost of installing a meter on the well(s) if a new meter is needed. If the existing meter is adequate there will be no additional assessment. The commissioner will determine if a meter is suitable. The ongoing cost of operation and maintenance of the meters (including replacement when necessary) will be assessed to all the water users.

4. The water users will be assessed for the commissioner's salary and other expenses of the distribution system.

5. An assessment surcharge will be placed on the commercial water users because of the year around effort required by the commissioner on the commercial wells. The distribution committee will determine the amount of the surcharge.

WATER COMMISSIONER

1. The commissioner will be responsible to report to the State Engineer the types of crops irrigated on each parcel. This information will not be used for regulation but will assist the State Engineer in calculating the amount of groundwater used.

2. Although not used for regulation, the commissioner will be responsible to measure and report the surface water used by any irrigators with surface rights. Surface irrigators will be responsible for the installation and maintenance of the flumes and weirs. This information will assist in tabulating the total water use for the irrigated lands in the Milford area.

3. Irrigation data will be collected by both the commissioner and the State Engineer's Office. Therefore, the commissioner will not be entirely responsible for the report but he will assist the State Engineer's Office in preparing it.

1. REGULATE BY METERING FLOW : COMMITTEE INSTALL AND MANAGE ALL METERS
FIRST YEAR OF A 5 YEAR METER INSTALLATION PLAN

ITEM		FIRST YEAR	
	QUANTITY	COST/UNIT (US $/ UNIT)	TOTAL (US $)
UP FRONT COST:			
FLOW METER	30	500	15000.00
MANHOLE & INSTALLATION	30	200	6000.00
	TOTAL		21000.00
ANNUAL COST:			
METER MAINTENANCE	1	2000	2000.00
COMMISSIONERS SALARY (FULL TIME FOR 6 MONTH	1	***	***
SOCIAL SECURITY (7.5%)	1	***	***
TRAVEL	1	***	***

2. REGULATION BY IRRIGATED LAND: ACREAGE EXPANSION

ITEM	QUANTITY	COST/UNIT (US $/ UNIT)	TOTAL COST (US $)
ANNUAL COST:			
COST OF FLIGHTS AND PHOTOGRAPHIC SLIDES	85	12	1,020.00
PROPERTY OWNERSHIP PLAT	1	50	50.00
COMMISSIONERS SALARY (PART TIME FOR 6 MONTH	1	***	***
SOCIAL SECURITY (7.5%)	1	***	***
TRAVEL	1	***	***

***** Other distribution expenses to be determined by the committee and water users**